REMARKS

The Applicant has carefully considered this application in connection with the Examiner's Action and makes the forgoing amendments and remarks to place the Claims in condition for allowance, or alternatively, to frame the issues for appeal. .

I. Rejection of Claims 1-14 and 21-24 under 35 U.S.C. §112 second paragraph

The Examiner has rejected Claims 1-14 and 21-24 under 35 U.S.C. §112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant regards as the invention. In particular the Examiner indicates that there is insufficient antecedent basis of "the first and second opening" recited in Claims 1, 8 and 22. In response, the Applicant has amended these claims to recite "the opening," as suggested by the Examiner. These amendments should not necessitate a new search because the Examiner has conducted his search and evaluation of the claims with the presumption that the above-described amendment was applied.

II. Rejection of Claims 1-14 and 21-24 under 35 U.S.C. §103(a)

The Examiner has rejected Claims 1-14 and 21-24 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application No. U.S. 2001/0004489 A1 to Lim ("Lim" in view of U.S. Patent No. 6,015,482 to Stern ("Stern"). The Applicant respectfully maintains that the claimed invention is not obvious in view of the foregoing combined references, and this combination fail to establish a *prima facie* case of obviousness of Claims 1-14 and 21-24.

The combination of Lim and Stern, for instance, fail to teach or suggest all of the elements of the invention recited in independent Claims 1 or 8. As acknowledged by the Examiner (Detailed Action: Page 5, Lines 1-2), Lim fails to teach or suggest electroplating first and second contact layers over a respective portion of each of the first and second plating layers using the first and second plating layers. The Examiner, however, cites Stern for the proposition of disclosing a method of fabricating contacts on printed circuits wherein the contacts are formed on copper patterns. Stern, simply electroplates copper 20 on a portion of a copper foil layer 14 (FIGURE 2B; Column 5, Lines 31-44). As such there is no teaching or suggestion of electroplating using first and second plating layers as recited in Claim 1 or 8.

In a telephone conversation with the Examiner on April 14, 2003, the Applicant further pointed out that Lim also fails to teach or suggest forming a metal interconnect that reads on the metal interconnect recited in the independent claims. For instance, Claim 1 recites forming a metal interconnect on first and second opposing sides of a printed wiring board and through a via formed through the printed wiring board. Claim 1 also recites first and second dielectrics each having openings therethrough that expose portions of the metal interconnect. Claim 1 further recites forming first and second plating layers on the first and second dielectric layers in the openings and on the exposed portions of the metal interconnect. As further recited in Claim 1 the first and second plating layers are electrically connected by the metal interconnect.

In contrast, the only features that pass through dielectric layer 94 in Lim's FIGURE 6A to 6H are the unlabeled structures around holes 101a, 101b. Dielectric layers 106, 107 are subsequently deposited over these unlabeled structures. Dielectric layers 106, 107, however, do not have openings therethrough that expose portions of the unlabeled structures. Therefore the unlabeled structures

around holes 101a, 101b do not teach or suggest the metal interconnect recited in Claim 1. The Examiner maintains that features 97, 99, together with the unlabeled structures around holes 101a, 101b, reads on to the metal interconnect recited in Claim 1. The Examiner maintains that this structure must inherently be connected, because otherwise the device of Lim would not function as Lim discloses. The Applicant disagrees with the Examiner's characterization of Lim's method of forming interconnects spanning one or more dielectric layers (paragraph [0027]).

The Applicant submits that there is no teaching or suggestion in Lim's method that plated features 97, 99 are connected to each other, or to unlabeled structures around holes 101a, 101b. In fact, the reference teaches removing a layer that would otherwise interconnect them. In order to form interconnects 102, 104 on features 97, 99, Lim plates a copper layer 100 onto core layer 94 and then uses the copper layer 100 as an electrode to plate the interconnects 102, 104 (FIGURE 6C and 6D; paragraph [0027]). Lim then removes the remaining copper layers 100 by etching (FIGURE 6E; paragraph [0027]).

The Applicant contends that there is nothing inherent in Lim's method that requires features 97, 99 and unlabeled structures around holes 101a, 101b to be connected. Indeed, the very fact that Lim deposits copper layer 100 in order to form interconnects 102, 104 on features 97, 99, suggests that these features are not otherwise in electrical contact with each other. This is in contrast to Claim 1, which recites that the first and second plating layers are electrically connected by the metal interconnect, which extends through the via in the printed wiring board. Further, the features 97 and 99 do not extend through the via. The way in which the Examiner appears to be reading the claim requires only a portion of the metal interconnect to extend through the via. However, from a close reading of the present claims, it is clear that a portion of the interconnect is not claimed, but instead

the claim recites "an" interconnect that is formed through the via. Thus, the portion of the interconnect relied on by the Examiner does not meet the elements of the interconnect as recited in the independent claims.

Moreover, it is apparent that Lim forms interconnects 102, 104, (FIGURE 6E) before depositing dielectric layers 106, 107 (FIGURE 6F). This is in contrast to Claim 1 which recites forming first and second plating layers on the first and second dielectric layers, respectively, and in the openings. Lim can not form first and second plating layers in openings as recited in Claim 1, because Lim first forms interconnects 102, 104 and then deposits dielectric layers 106, 107 around the interconnects 102, 104. This is followed by deposition of copper layers 110, 112 onto the surface of dielectric layers 106, 108 (FIGURE 6G; paragraph [0027]).

Because the combination of Lim and Stern does not teach or suggest all elements of independent Claims 1 and 8, they fail to establish a *prima facie* case of obviousness with respect to independent Claims 1 and 8 and their respective dependent claims.

III. Additional References Made of Record

The Applicant believes that the additional references made of record and not relied upon by the Examiner are not as pertinent to the claimed invention as those relied on, but the Applicant retains the right to address these references in detail, if necessary, in the future.

IV. Conclusion

In view of the foregoing amendment and remarks, the Applicant now sees all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicits a Notice of Allowance for Claims 1-14 and 21-24.

The Applicant requests the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

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